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4. The objects of the Association are :

(a) To promote and make preliminary preparations for work requiring international coöperation for its prosecution.

(b) To facilitate intercourse, both professional and social, between scientific men of all countries.

5. The governing body of the Association shall be an International Council composed of one representative from each constituent Academy.

6. The Council shall hold its first meeting at such time and place as may be determined at the meeting of the Association in 1900, and shall make rules for its own organization and guidance, including the transaction of business by correspondence.

7. For the purpose of considering and framing recommendations concerning scientific enquiries calling for international coöperation special International Committees shall, upon recommendation of one or more constituent Academies, be instituted either at a general meeting of the Association, or when necessary during the intervals between such meetings, by the International Council.

8. Such International Committee shall consist of delegates appointed by the constituent Academies with special reference to their qualification to deal with the questions under consideration.

9. The first meeting of such a Committee shall be called by the President of the International Association or by the President of the Council, and at this meeting each committee shall adopt rules for its own guidance.

10. Each International Committee shall make a report embodying such recommendations as it may think advisable, to the President of the International Council who shall transmit the same to the constituent Academies.

11. The President of the Council shall, however, have power, if he see fit, before transmitting such reports to the constituent Academies, to submit the same to the Council, and this body shall have power to refer back the report to the committee for further consideration.

12. For the transaction of business, the President of the Council shall be authorized to employ a secretary whose compensation, as well

as other necessary office expenses, shall be provided for by contributions from the constituent Academies.

DELEGATES TO THE WIESBADEN CONFERENCE, OCTOBER 9 AND 10, 1899.

1. Königlich preussische Akademie der Wissenschaften, Berlin : Auwers Virchow, Diels.

2. Königliche Gesellschaft der Wissenschaften, Göttingen : Ehlers, Leo.

3. Königlich Sächsische Gesellschaft der Wissenschaften, Leipzig : Windisch, Wislicenus.

4. Royal Society, London : Sir M. Foster, Rücker, Armstrong, Schuster.

5. Königlich Bayerische Akademie der Wissenschaften, München : von Zittel, Bechmann, Dyck, von Sicherer.

6. Académie des Sciences, Paris : Darboux, Moissan.

7. Kaiserliche Akademie der Wissenschaften, St. Petersburg : Famintzine, Salemann.

8. National Academy of Sciences, Washington : Newcomb, Billings, Remsen, Bowditch, Bell.

9. Kaiserliche Akademie der Wissenschaften, Wien : von Hartel, Mussafia, von Lang, Lieben. Ersatzdelegirte : Gompertz, Toldt.

#### BLUE FOX TRAPPING ON THE PRIBILOF ISLANDS.

THE value of the Blue Fox, *Vulpes lagopus*, as a fur-bearing animal, has caused the establishment of various 'fox farms' or 'ranches,' not only on the islands of the northwest coast, and especially in the Aleutian chain, but even on some of the islands off the coast of Maine ; and it is naturally desirable to ascertain how these may be made to yield the best results. The problem of the 'fox farmer' is to obtain the greatest number of skins in a given season without so reducing the breeding animals as to lessen the catch for the succeeding year. Natural losses, due to starvation, may be prevented by feeding, but as foxes are naturally monogamous, it is evidently necessary to render them polygamous in order to render fox-raising a decided success, and this is the great desire of the trappers.

On the Pribilof Islands, in Bering Sea, the Blue Fox has been trapped continuously

for a long series of years, but not until recently has any attempt been made to study these animals with the view of not only systematically feeding and trapping them, but of endeavoring to effect such changes in their environment as would tend to make them polygamous. This attempt has been made by Mr. James Judge, who has for several years been Treasury Agent on the island of St. George, who has taken much interest in the fur seal and fox question, and to whom the information contained in this article is entirely due. From its isolation, its hilly, rocky character, and from the vast numbers of birds which resort to it for a breeding place, this island is admirably suited for the abode of the fox, the great drawback being the lack of food during the winter. This lack of food not only acts directly on the foxes by starving them, but causes them to abandon the island and go out on the floe ice whenever this drifts down upon the island, as it often, or usually does in early spring. In summer the foxes feed upon birds and eggs and to some slight extent, upon dead seal pups and the placenta dropped from those recently born. The bodies of the seals on the killing grounds are eaten to some extent, but these bodies rapidly decay, and besides during the killing season the supply of other food is most abundant.

Since the advent of pelagic sealing the foxes have had an abundant, though brief, supply of food in the fall in the shape of the seal pups whose mothers have been taken at sea, and who have starved in consequence. In 1896 every starved pup was devoured by the foxes, so that no actual count of them could be made, but from an estimate made by comparison with the known facts on St. Paul Island, their number was probably considerably over 2000, while in previous years it was much greater. The foxes have fed to some extent on the Pribilof Lemming, *Lemmus nigripes*, and seem to have nearly

exterminated the little creature, since but one specimen was seen in 1896-97. In winter the foxes eat anything that comes to hand, extraordinary as it may seem, subsisting to a considerable extent on sea urchins, *Strongylocentrotus drobaehiensis*, which are gathered at low tide. Considerable grass is found in their stomachs in winter and some worms, which they scratch up on the killing grounds, as well as with a few tunicates and an occasional fish bone; but it may be said that in winter the foxes lead a precarious existence. Some not very energetic attempts have been made to introduce the Cottontail Rabbit on St. Paul Island, and the Cottontail and Jack Rabbit elsewhere, but so far without success; the proposed introduction of the *Spermophile*, *Spermophilus empetra*, which is found at Unalaska, would probably succeed better.

On the Aleutian Islands dried salmon has been used for feeding the foxes in winter, and on St. George the experiment was also tried of using cracklings and linseed meal. This latter was evidently not to the foxes' taste, but it was found that by mixing the meal with seal oil it was eagerly devoured. In 1897 Mr. Judge decided to use the carcasses of the fur seals taken for skins, but as the catch on the Island of St. George has of late years become so small that the bulk of the meat is eaten by the inhabitants, a number of bodies were salted and brought over from the neighboring island of St. Paul. Mr. Judge tried the experiment of putting down fresh carcasses in silos, as well as of salting them, and this plan has, with one exception, been entirely successful. The exception was when some seventy foxes effected an entrance into one of the pits, where they feasted to such an extent before being discovered, that a few died. The salted bodies were freshened by protracted soaking before being fed to the foxes. As the trapping season drew near these carcasses were placed at night in the vicinity

of one of the sheds, near which it was proposed to set traps, and, starting with four bodies, the number was increased as found necessary, until no less than ten were consumed each night.

When all was ready trapping was begun, box traps being used, in order that the foxes taken might be examined to ascertain their sex, the dead falls formerly employed killing whatever entered, regardless of sex or condition. All females were turned loose after being marked by clipping a ring of fur from the tail, an exception being made when white foxes were caught, all of these being killed in the endeavor to produce a breed none of which should turn white in winter.

As the use of box traps proved to be somewhat slow, a small enclosure, or corral, was hastily constructed adjoining a large shed, and so arranged that the entrance could be readily closed by a man stationed within the building. This plan proved an immediate success, the foxes entering the enclosure without hesitation, so that from five to forty could be taken at one time. Having been shut in the corral the animals were driven through a small door cut in the side of the shed into a room where they were caught by means of forked sticks pressed over their necks, these being superseded by boards with a U-shaped opening in one end. The foxes were then passed, one at a time, through a small door into a second room, where they were received by a gang of men and examined as to sex. The females were all released, while the majority of the males were killed by breaking their necks, the intention being to leave one male to every three females. All foxes liberated were marked as previously noted, and this mark was repeated whenever an individual was captured more than once, with the result that by the end of the season some animals had lost most of the fur on their tails.

The possibility of rendering the foxes polygamous remains to be seen, and it will

naturally take a series of careful observations extending over a number of years to definitely determine this point. At present it can only be said that the catch of the second season on St. George did not fall below that of the first, and some observations show that the male foxes will have intercourse with more than one female, while the bringing together of the animals that would, under natural conditions be widely scattered, is a most important factor in rendering them polygamous. The curious fact presents itself that in every instance save one, the number of males taken exceeded that of the females, even towards the close of the trapping season, but it is, of course, possible that this may be due to the attraction of the females for the males and not to any excess in the birthrate of the latter.

Mr. Judge's observations have made it clear that the foxes have no predilection for any particular locality, the question of food being the main factor in determining their distribution. This was proved by trapping at various parts of the island, the result being that comparatively few animals were taken save at the village, while those caught at one locality would subsequently be taken at another. Consequently by judicious baiting they can be readily enticed from all parts of the island to the vicinity of the village, where they can be taken by wholesale, in such manner that the total number of foxes on the island can be pretty nearly ascertained, as well as the proportions of the sexes. The blue foxes seem to lack the proverbial craft of the other species, for not only did they readily enter the pen, but, as shown, by the marks, they entered again and again, some individuals being captured no less than five times, while a few were taken twice in succession at intervals of about ten minutes. That the scent of man about the corral should not deter the foxes from entering is not surprising, since, except during the trapping sea-

son, they have no cause to fear him. Such precautions as that of taking the animals out in a boat so that they may be killed over water seem rather absurd, the more that when pressed by hunger they will even devour the skinned bodies of their own species. One piece of information desired, as to whether or not the foxes would wander off on the ice floes when they were being fed, has not yet been obtained because, curiously enough, during the two years that the experiment has been made the ice has not happened to touch St. George.

Incidentally Mr. Judge has made observations on the food, size and condition of foxes, and has shown that the pelt does not improve with age, as has commonly been stated, but that the yearlings and two-year-olds have the best fur. As for weight, the smallest fox weighed a little over eight pounds, the largest a trifle more than fourteen, the great majority weighing in the vicinity of ten pounds.

The outcome of these experiments will be awaited with much interest, and if by a little artificial selection and environment a naturally monogamous animal can be rendered polygamous, the supply of blue fox furs will be materially increased.

The table appended gives the results of the catch for the season of 1898-99, and the total number of animals must seem rather surprising to one familiar with the island.

It only remains to add that the greatest number taken in any one evening was 245, of which 61 were killed; the second best night's work was 211, and of these 57 were killed.

Foxes taken on St. George during the season of 1898-99:

Male Blue Foxes trapped and killed.....	334
Male Blue Foxes otherwise killed.....	34
White Foxes killed, males and females.....	18
Male Blue Foxes trapped and released.....	110
Female Blue Foxes trapped and released.....	389
Total.....	885

F. A. LUCAS.

#### THE DEEP WELL AT WILMINGTON, N. C.

THE deep well which is now being bored at Wilmington, N. C., is of especial interest to geologists: (1) That in reaching granite, as it does at about 1109 feet, it shows the absence at this point of formations between the upper Cretaceous and the old crystalline floor underlying the coastal plain deposits; (2) it shows the existence there of an unfortunately and unusually thick series of salt-water-bearing strata, from 350 to 1100 feet below the surface; (3) it may throw some light on the relations between the deposits of the sand hill regions (generally classed as Potomac) and the upper Cretaceous beds penetrated by this well.

The well is located on the bank of the northeast Cape Fear river, at Hilton Park, one mile north of Wilmington. The river border at this point exhibits two terraces; one only a few feet above tide water, extending back a distance of 30 or more feet from the river; and the other rising 30 to 40 feet higher, extending back for a considerable distance, and indeed representing the general surface of the region. The difference in elevation between these two terraces represents the thickness of the remnants of the Tertiary fossiliferous clays and limestone and the overlying recent sands. The lower terrace represents the upper surface of the Cretaceous; so that the well starts in the Cretaceous clays and sands, and continues in them to a depth of some 1109 feet. In these sands and clays there are occasional beds of shell-rock and calcareous sandstone varying in thickness from a few inches to 30 feet, and occasional thin beds of clay containing small nodules or concretions. The sands are mostly micaceous and are usually quite fine grained, with a prevailing gray color. From about 700 to 800 feet, their color is decidedly greenish. Below 950 feet these sands become coarser and are interbedded with occasional gravel deposits,